

Federation

of

European

Explosives

Manufacturers



European Commission Committee of Competent Authorities: Mutual Joint Visit ('MJVs') Programme on Inspections under Seveso III directive

**Workshop on Explosives and Pyrotechnics Norway
9th –11th November 2016**

Presentation by Hans H. Meyer, Secretary
General of FEEM:

Explosive Industry Co- ordinated Initiatives on Safety and Security

FEEM



The Federation of European Explosives Manufacturers is a non-governmental organisation created by European explosives manufacturers. The main objective of the Federation is to encourage best practice in the industry, with particular regard to the improvement of

- Safety, Quality and Security in methods of manufacture of explosives and working conditions
- Safety and security of civil explosives during transport, handling, storage and use.

The Federation also provides a forum for debating questions, problems, facts and topics arising prior to and during manufacture, storage, transport, use and disposal of Civil Explosives.

In short – the Objectives are aimed at:

- ✓ Security
- ✓ Safety
- ✓ Environment
- ✓ Technology
- ✓ Quality
- ✓ Communication
- ✓ Competence

FEEM



The Federation has formed a series of Working Groups in specialist areas of the explosives industry and these produce Codes of Good Practice, Guidance-Notes, Model Procedures & Technical Bulletins to which all members of FEEM aspire. The Working Groups concerned are:

- Health and Safety in Manufacture
 - Safety in Transport and Storage
 - Blasting Practice & Application
 - Security
- The Working Groups meet regularly several times a year.

Some examples of recent publication by these groups :

1. **PRINCIPLES OF GOOD BUILDING DESIGN FOR EXPLOSIVES PLANTS**
2. **ELECTROSTATIC HAZARDS**
3. **RADIO FREQUENCY HAZARDS**
4. **SECURITY GUIDANCE DOCUMENT**
5. **MANAGEMENT OF EMULSION PUMP TRUCKS**
6. **CAUSES OF FLYROCK**
7. **ENVIRONMENT GUIDE: GROUND AND SURFACE WATER**
8. **AFTER-BLAST FUMES**

Some examples of recent publication by these groups :

10. **GENERAL INFORMATION ON BLAST VIBRATION**
11. **PREVENTING DESENSITISATION**
12. **HANDLING MISFIRES**
13. **PREVENTION OF PREMATURE INITIATION**
14. **SAFETY IN QUARRY OPERATIONS**
15. **CONTROL OF AFTER DETONATION FUME IN TUNNELLING OPERATIONS**
16. **CARRIAGE OF EXPLOSIVES**

Some examples of recent publications (cont.):

17. **TRANSPORTATION STORAGE MIXING AND HANDLING OF AN AND ANFO**
18. **STANDARDS FOR TRANSPORT & STORAGE**
19. **MIXING AND HANDLING OF BULK EMULSION**
20. **OCCUPATIONAL HYGIENE**
21. **USE OF EXPLOSIVES**
22. **GUIDE FOR EDUCATION AND TRAINING OF PERSONNEL INVOLVED WITH CIVIL EXPLOSIVES USAGE**
23. **DISPOSAL & TREATMENT OF BLASTING EXPLOSIVES**
24. **GROUND AND AIRBORNE VIBRATION**

Some examples of recent publications (cont.):

25. **CARRIAGE OF EXPLOSIVES**
26. **SECURITY GUIDANCE DOCUMENT**
27. **WORKING HYGIENE IN THE HANDLING OF NG , NG PRODUCTS, DNT AND DNT PRODUCTS**
28. **NG AND NITROGLYCOL: HANDLING OF SPENT ACID AND EFFLUENT**
29. **WORKER HYGIENE IN THE HANDLING OF TNT AND PRODUCTS CONTAINING TNT**
30. **MANUFACTURING CONTROL SYSTEMS**

Some examples of recent publications (cont.):

31. **STORAGE OF EXPLOSIVES**
32. **SHELF LIFE RECOMMENDATIONS**
33. **CRISIS MANAGEMENT**
34. **EMERGENCY RESPONSE PLANNING**
35. **SECURITY MANAGEMENT SYSTEM & RISK ASSESSMENT**

and many more. All of these documents can be downloaded free-of-charge from FEEM's home-page!

The Products



Packed Explosives



(21% of the total explosives' market)

1. Dynamites
2. Emulsion Explosives
3. ANFO (Ammonium Nitrate Fuel Oil)
4. Black Powder
5. Permitted Explosives for Underground Mining
6. Powderous explosives containing demilitarized explosives

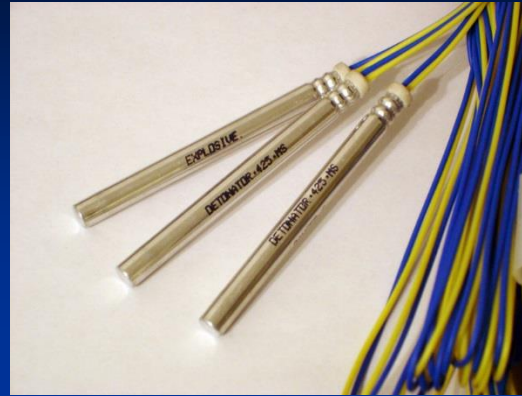
Bulk Explosives



(79% of the total explosives' market):

1. Emulsion (suspension) explosives
2. ANFO

Initiation Devices



1. Detonators

- Electrical
- Non-Electrical
- Electronic

2. Detonating Cords

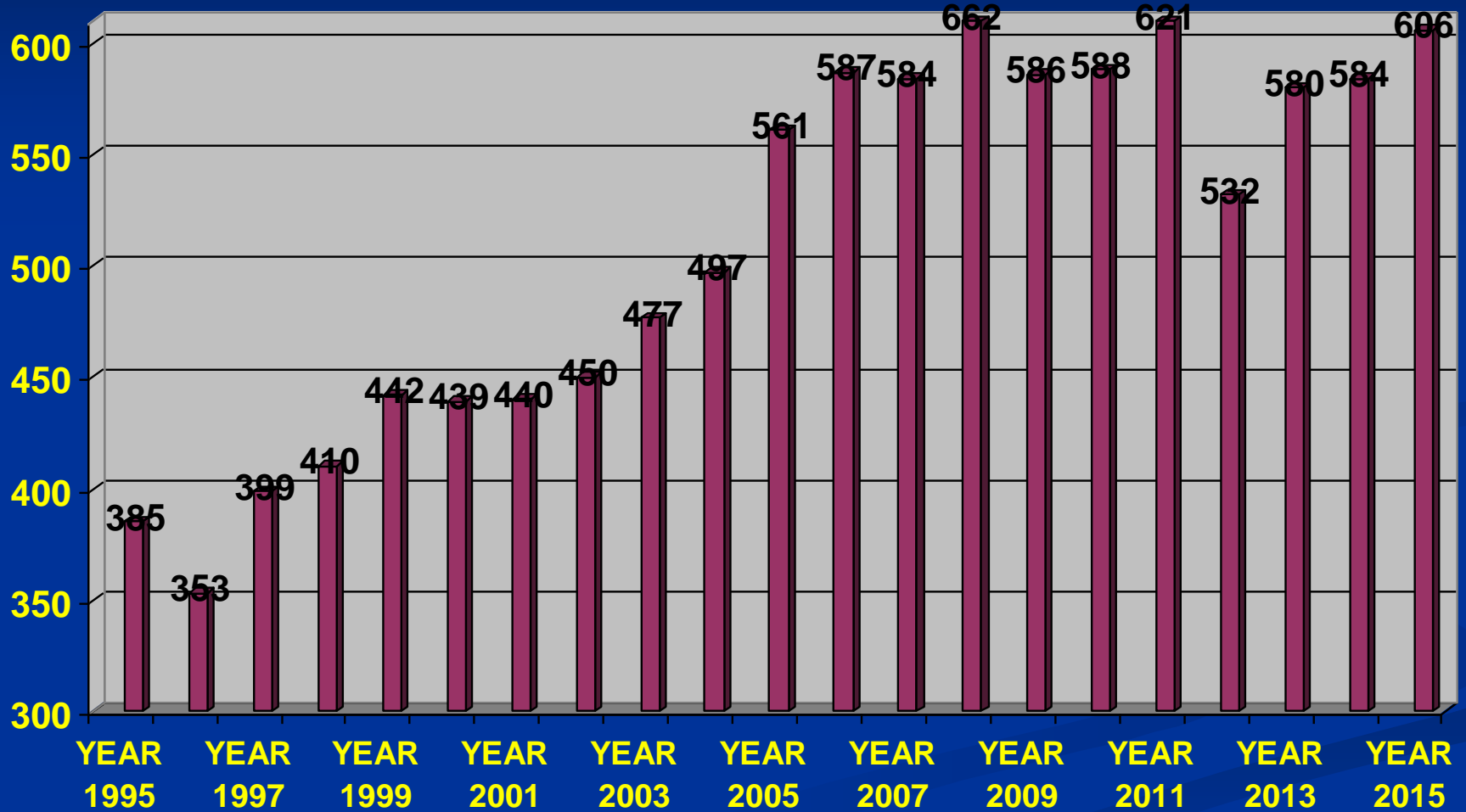
3. Boosters / Primers

Explosives for the Oil & Gas Industry

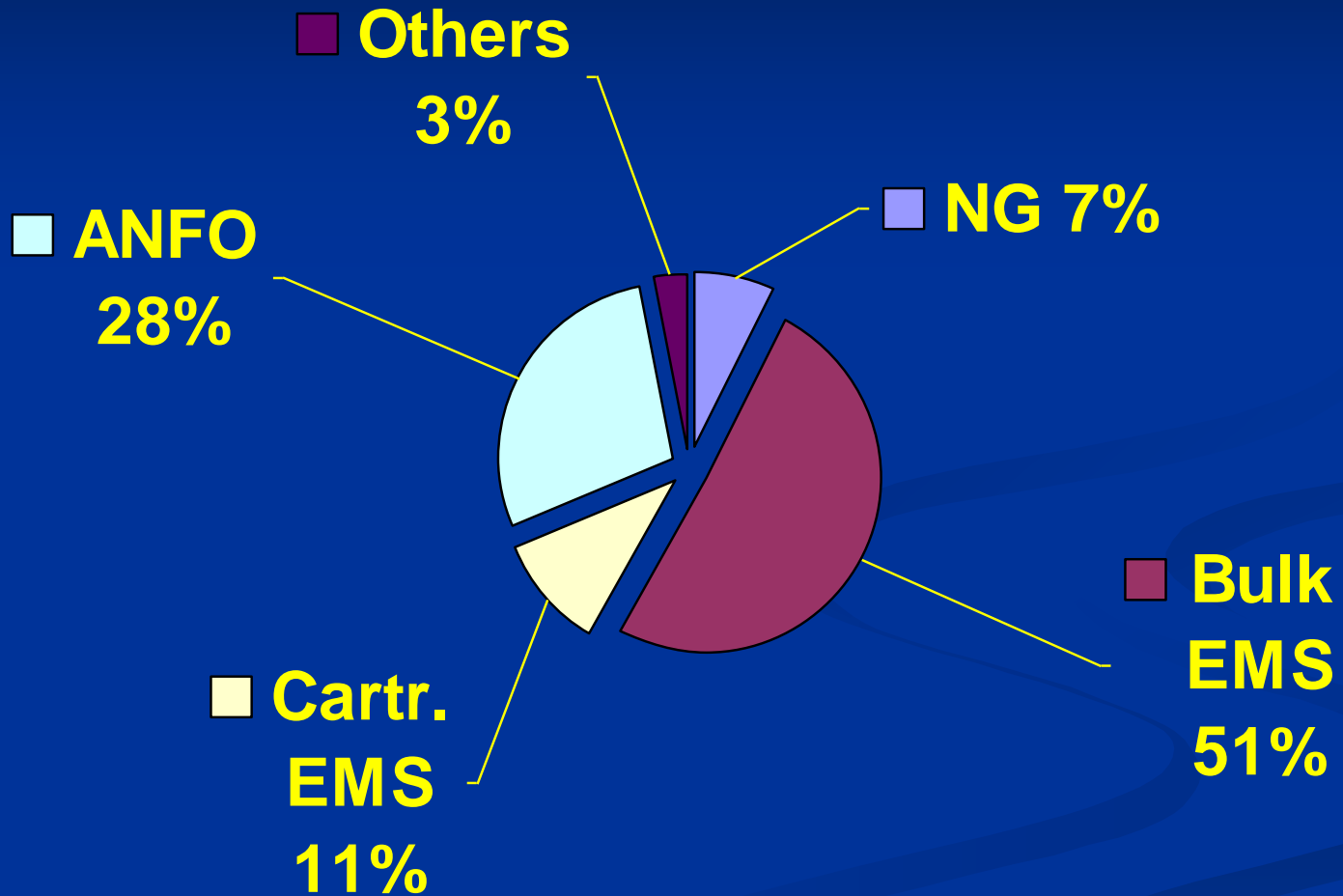


- 1. DETONATING CORDS**
- 2. DETONATORS**
- 3. SHAPED CHARGES**
- 4. BI-DIRECTIONAL BOOSTERS**
- 5. PERFORATING HARDWARE**
- 6. SEISMIC EXPLOSIVES**

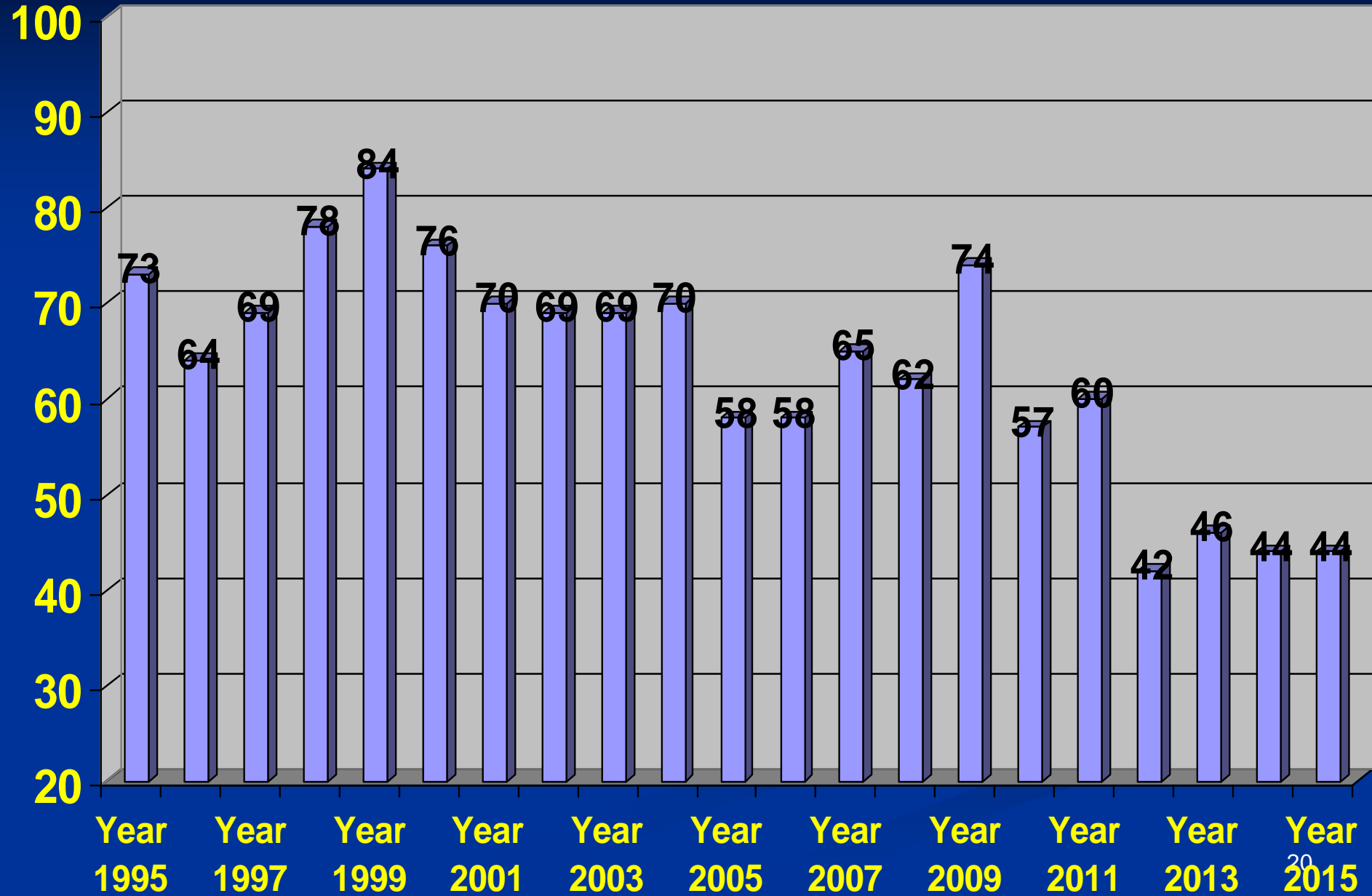
Total Explosives since 1995 (1.000 tons)



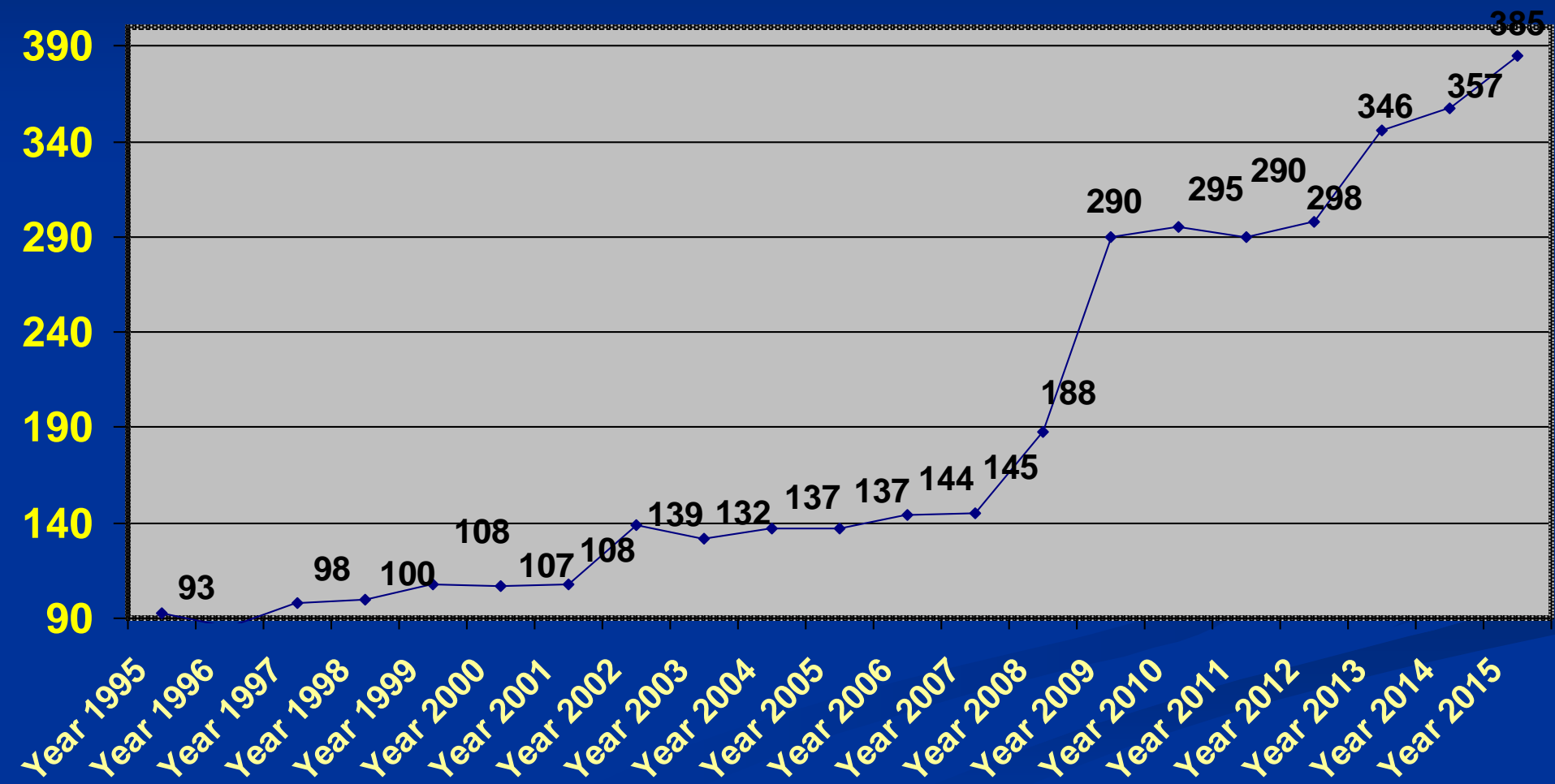
Total Explosives 2015 by Share



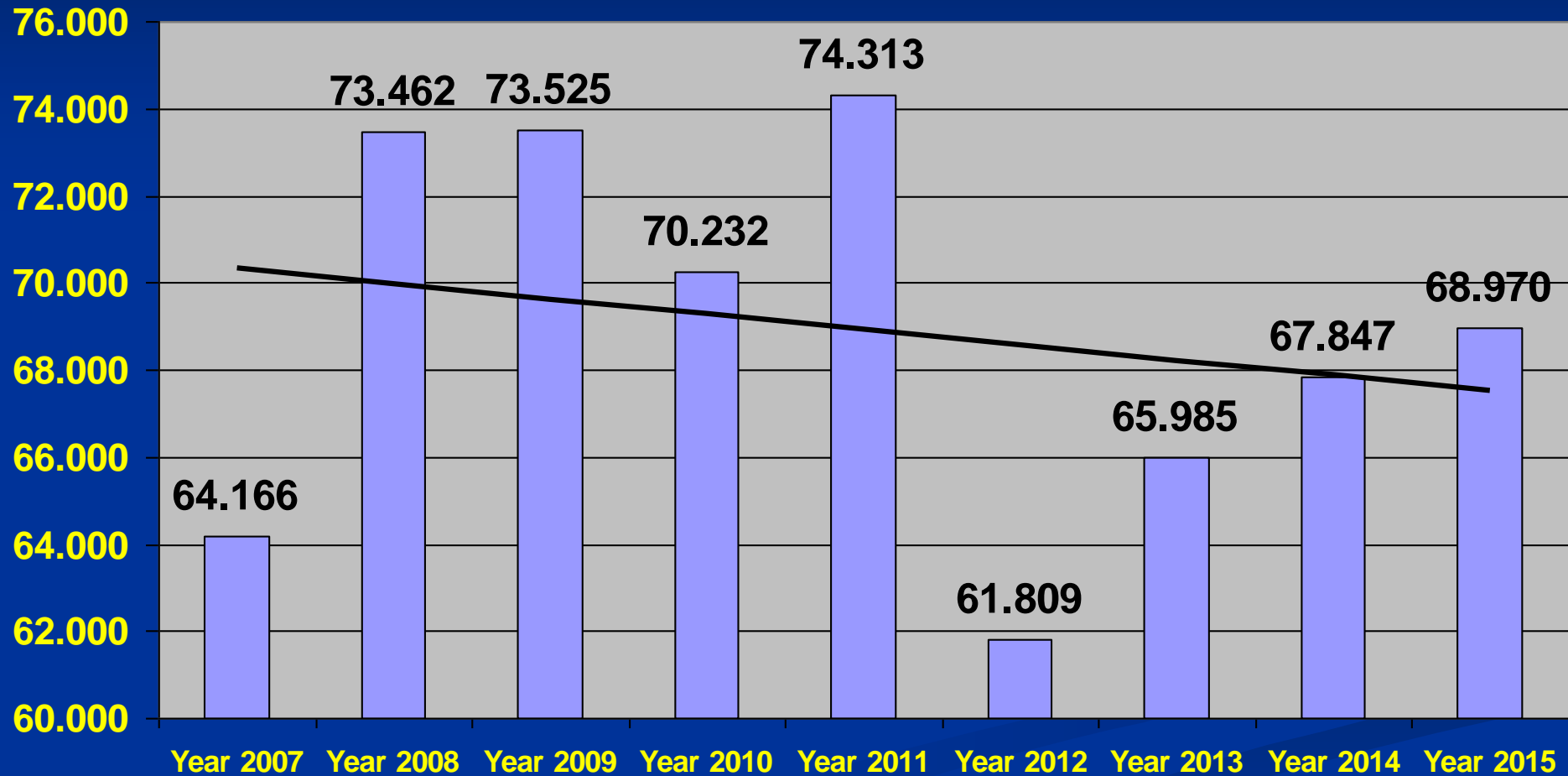
NG Explosives since 1995 (1.000 tons)



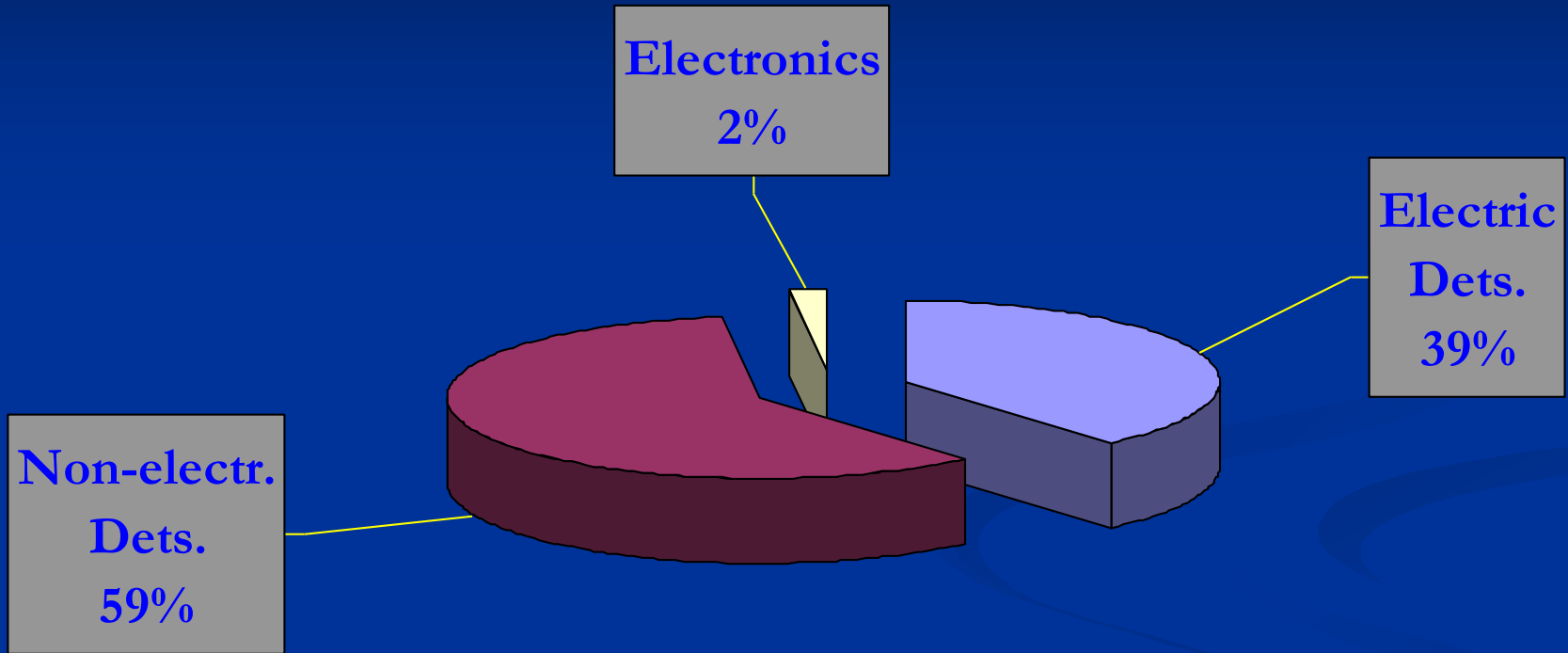
Total Emulsions since 1995 (1.000 tons)



Total Detonators since 2007



Detonator Shares (%)



600.000 tons of industrial explosives and 70 Million detonators are detonated every year in Europe for civil purposes. Almost all of these explosives are manufactured, transported, stored and used without causing any major incident or alarm to the general public.

The safety & security record of the explosives industry is considerably higher than almost any other industry of a similar nature.

FEEM



These volumes represent 350 Million separate explosives items annually (packaged explosives, detonators, detonating cord, boosters, primers etc. without bulk explosives) with a value of 1.500 Mio. Euro.

The frequency of civil explosive shipments in and through Europe is around 500.000 movements per year (this doesn't include pyrotechnics, military and hunting & sporting ammunitions).

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The general public is often unaware that explosives enable:

- the production of aggregate for road building and for concrete
- the production of limestone for the manufacture of cement
- the production of gypsum for the manufacture of plaster
- the extraction of almost all other minerals & ores
- Civil Explosives are an important tool for modern mining and civil engineering.



Typical Applications



Filling of a blast hole with Dynamite

Blasting in a Quarry



Demolition Blast



Underground Mining



Tunneling



FEEM



Without the use of explosives for civil purposes, it is difficult to see how civilization could have advanced to such a state as it has done today.



Structure of FEEM



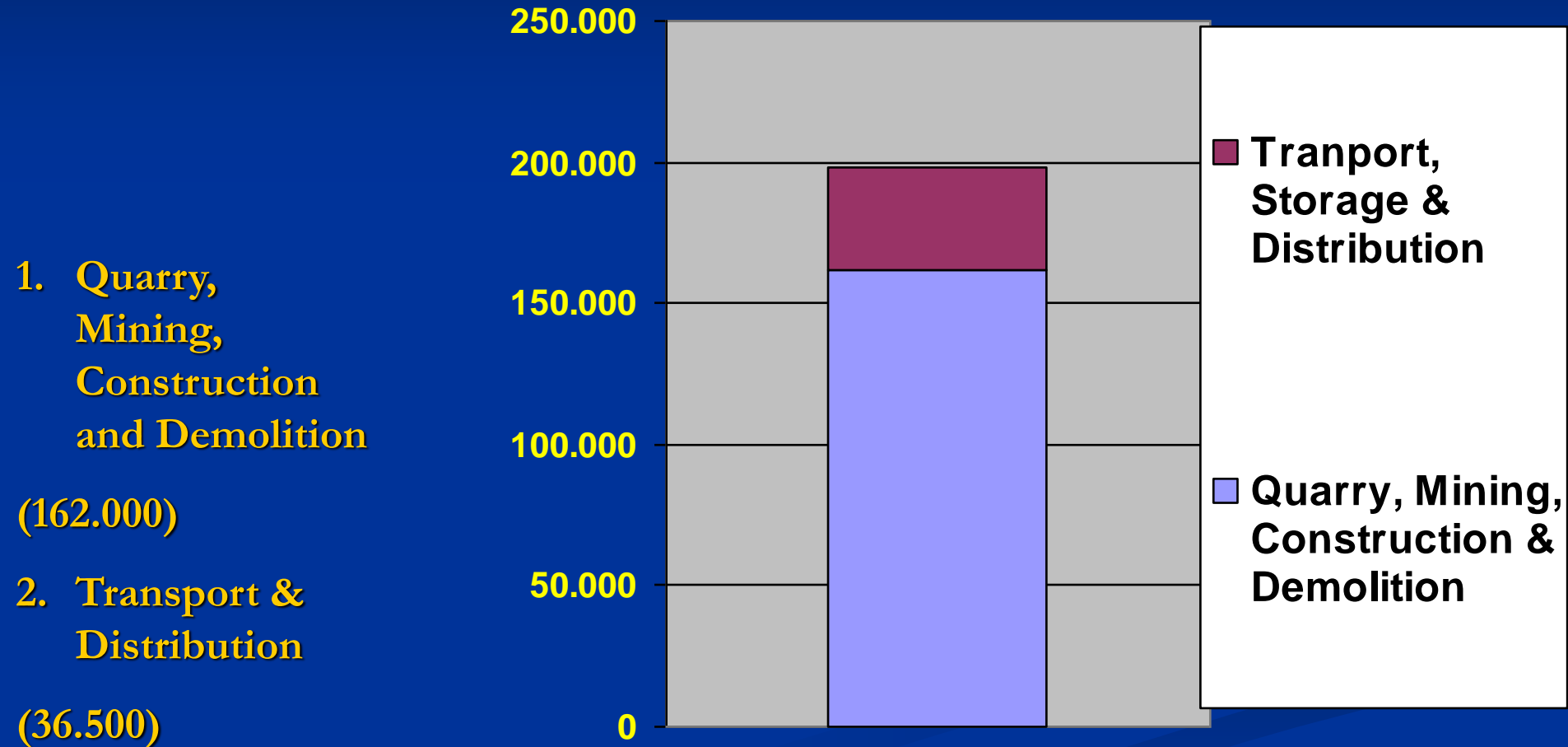
FEEM Structure

FEEM represents with 22 members nearly 100% of the explosives companies in Europe and they are represented in all European states.

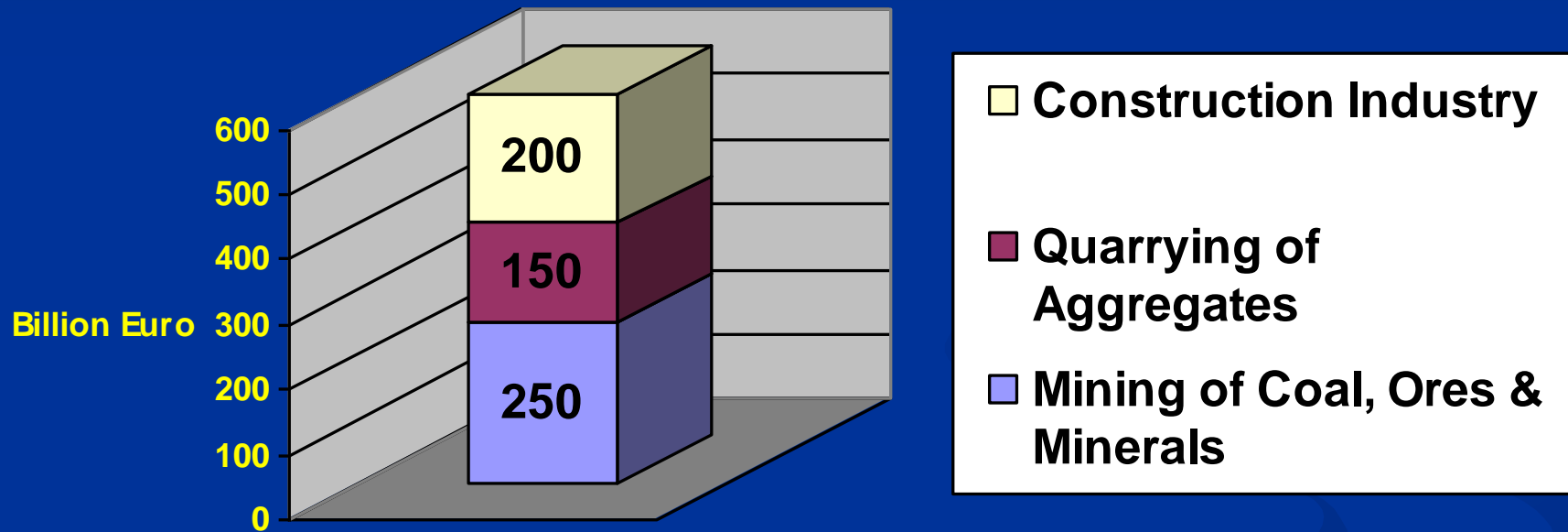
FEEM Structure

Our Members operate about *100 EXPLOSIVES' PRODUCTION SITES* in Europe and directly employ around 6.000 people.

Number of people in Europe connected directly to explosives (200.000)



Total Economic Added Value by Blasting Operations in EU Europe (> € 600 bn.)





SAFETY AND SECURITY POLICY & CONCEPTS

IN THE EXPLOSIVES INDUSTRY

SAFETY AND SECURITY INPUTS, RECOMMENDATIONS, REGULATIONS & LEGISLATION

- 1. National Legislations and By-laws,**
- 2. EC Directives & Regulations,**
- 3. UN Recommendations & Regulations,**
- 4. FEEM Safety & Security Concepts,**
- 5. Company Standards & Procedures**

1. National Legislation



1.) Explosives Laws & By-Laws:

The national Explosives Acts regulate essentially the manufacture, handling, storage, transport, security measures, environmental matters and importation of explosives. In principle, explosive substances and articles should only be used if they were previously approved & registered (CE type-approval & conformity). Generally explosives may only be manufactured and be left to companies or individuals who possess a permit.

1. National Legislation

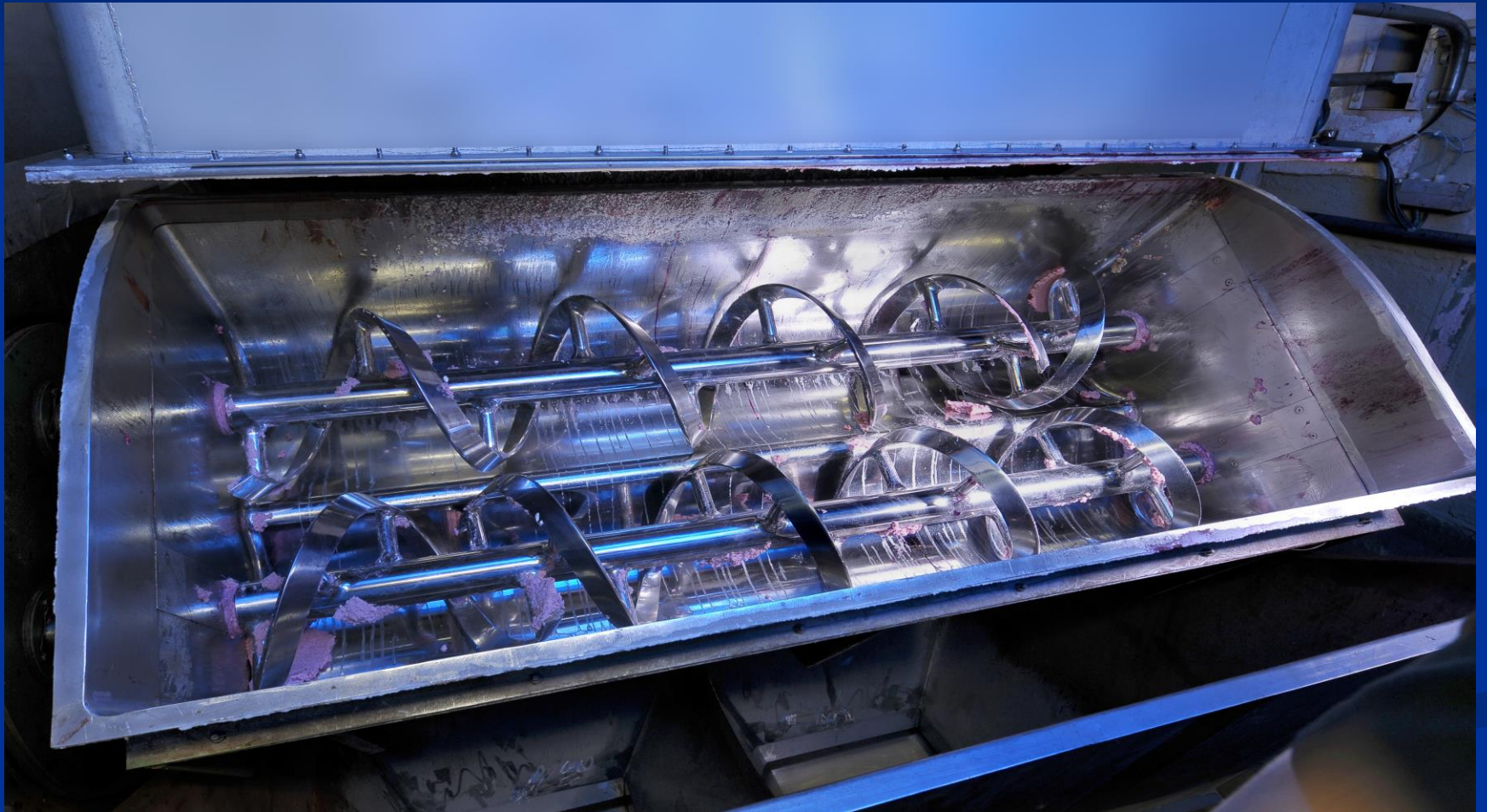


2.) Explosives Laws & By-Laws:

Also the construction of explosives' plants and of magazines is regulated according to safety & security principles.

This includes e.g. safety distances depending on volume & the type of inventory.

Dynamite Production Mixer



Dynamite Production Cartridging



Emulsion Plant



Emulsion Explosive



Non-electric Detonator Assembly



A typical explosives' magazine



1. Earth covered
2. Thick steel reinforced concrete walls, roof & floor
3. Strong-room doors with electronic protection & connection to security service or police
4. Motion sensors
5. Pressure sensors
6. Daily inventory
7. Regular checks by authorities



Inside the Magazine



2.) Security Vetting ACT and Clearance Regulations

Always within the framework of the law in each country, it is very important to select suitable “psycho-profiles” of employees, especially for those who have access to explosives. Only those employees, contractors and shippers are allowed to work in the explosives industry who have been screened and cleared by national security agencies. (“Staff must have the right history”)

2. European Explosives Directives which



have been implemented into National Legislations

1. **COUNCIL DIRECTIVE 93/15/EEC of 5 April 1993 (Recast on 29 March 2014 of the Explosives for Civil Uses Directive 93/15/EEC alongside 8 other non-explosive related Directives as part of a New Legislative Framework) on the harmonization of the provisions relating to the placing on the market and supervision of explosives for civil uses.**
2. **Council Directive 2008/43/EC of 5 April 2008 setting up a system for the identification and traceability of explosives for civil uses (Track & Trace) based on the 48 Recommendations by the Explosives Security Experts Task Force to Enhance the Security of Explosives**



Trace & Track Directive 2008/43/EC of 5 April 2008

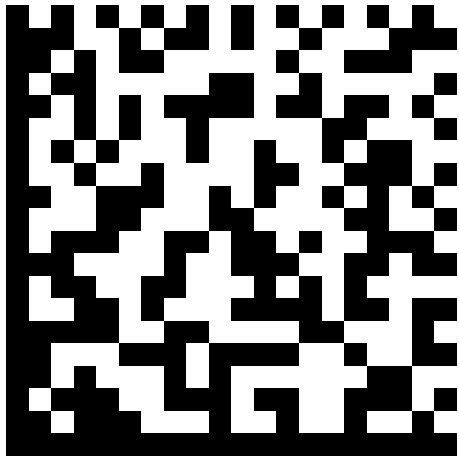
Already in November 2009 FEEM has introduced a Guidance Document for a standardized & harmonized Coding System in connection with the European Commission's Directive 2008/43/EC. The system is based on the GS 1 coding system. It uses the ECC 200 matrix code which contains mandatory (legally required) and optional information. All information from all suppliers can be scanned and processed with all standard IT-systems.



This FEEM Guidance document has been prepared to outline the method adopted by FEEM Members to achieve a harmonised system for the purpose of implementing the European Commission’s Directive 2008/43/EC to establish “a system for the identification and traceability of explosives for civil uses”, and the associated national legislation. The adoption and adherence to it shall minimise logistical problems throughout civil explosives supply chains in Europe.

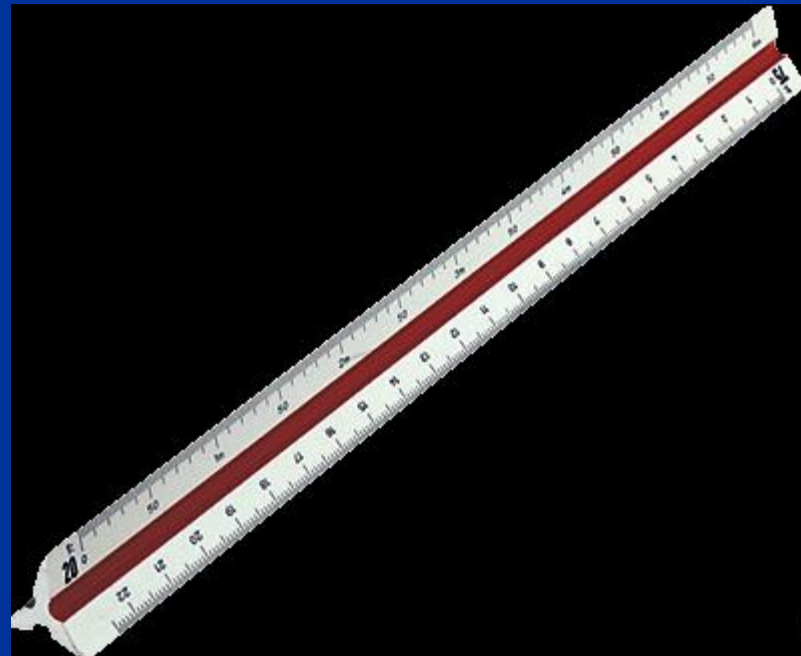
At present there is a proposal at UN level to introduce the EC system on a globally harmonized basis into ADR.

Alpha Explosives GmbH



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100 mm





SENDING INFORMATION BY ELECTRONIC MEANS

FEEM has also decided to use a XML format when the information has to be sent by electronic means.

XML provides a standardized and predictable structure for electronic business messages, enabling business partners to communicate business data rapidly, efficiently and accurately, irrespective of their internal hardware or software types.

3. UN Regulations

The European Agreement concerning the International Carriage of Dangerous Goods by Road, commonly known as ADR governs transnational transport of hazardous materials.

The relatively new chapter 1.10 deals with SECURITY PROVISIONS e.g.

- 1.10.1.1 All persons engaged in the carriage of dangerous goods shall consider the security requirements for the carriage of dangerous goods set out in this Chapter commensurate with their responsibilities.
- 1.10.1.2 Dangerous goods shall only be offered for carriage to carriers that have been appropriately identified.

4. Industry Safety and Security Concepts & Policy

FEEM has drafted a number of guidance documents concerning safety in production, storage & distribution (SHE Guidance) as well as security guidance in response to the increased threat from global terrorism.

FEEM SHE Vision, Strategy & Implementation

- Vision & Commitment:
 - NO INJURIES TO ANYONE, EVER!

- Strategy:
 - Equipment & materials that are designed and maintained fit for purpose
 - Well communicated principles and behaviours
 - A management system, which describes systems of work that ensure the integrity of equipment and materials and people-based control measures, is sustained.

IN ORDER TO IMPLEMENT AND ACHIEVE THESE GOALS FEEM AS DEVELOPED SHE GUIDELINES:

1. Emergency Plans
2. Incident Management
3. Periodic Hazard Studies
4. Job Safety & Environment Risk Analysis
5. Clearance to Work
6. Forklift Trucks
7. Vehicles on Site
8. Hazard Studies
9. Modification (Change Management)
10. Safety Instrumented Systems

SHE in Blasting Application

- There are also systems in place for a safe performance of explosives in the field.

Preparing the Blast



8 tons of Explosives



That is how a good blast should look like!



Security



Underlying Philosophy

**Proactive assessment and management
of risk is vital to improving security**

Risk Assessment Principles

- Commit to reducing security risks
- Promote risk reduction culture with security focus in day-to-day operations
- Partner with all involved parties incl. authorities
- Prioritize security risks for effective resource allocation
- Take action to reduce identified risks
- Strive for continuous improvement
- Communicate with all parties

4. FEEM Security Concepts & Policy

FEEM has drafted several guidance documents in response to the increased threat from global terrorism.

One of these documents is called:

**SECURITY MANAGEMENT SYSTEM &
RISK ASSESSMENT**

4. FEEM Security Concepts & Policy (con't)



This documentation mainly deals with:

- ✓ Security Plans
- ✓ Security as a managing discipline.
- ✓ Risk Assessment Principles
- ✓ Highest collaboration with the Competent Authorities.
- ✓ Initial and periodical training.
- ✓ Careful verification of consignees.
- ✓ Special procedures for exports to certain countries

4. FEEM Security Concepts & Policy (con't)



This documentation mainly deals with:

- ✓ Internal periodical audits
- ✓ Unauthorized Access
- ✓ Measures to address security risks for materials en route to include shipments stored incidental to movement
- ✓ Personnel Security
- ✓ Security Vetting and Clearance
- ✓ En Route Security

Conclusion

In our Federation we firmly believe that Safety and Security is a daily management task of managers, directors and all employees. We also strongly believe that such guidelines and approaches must be laid down by the most senior management to achieve an Internal Safety & Security Culture.

Safety & Security affects all of us and we are convinced that these factors contribute to the sustainability of our members and even to their economic success.

We are not only responsible for our businesses but more important is the protection of people & the environment.

I wish to once again thank you for this invitation to the conference and hope I have been able to contribute in a manner that Safety & Security is a matter of great concern and the obligation of all of us.